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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,857	08/25/2003	Keishi Takeyama	03504/LH	4191
1933	7590	06/14/2006	EXAMINER	
FRISHAUF, HOLTZ, GOODMAN & CHICK, PC			HANDAL, KAITY V	
220 Fifth Avenue			ART UNIT	
16TH Floor			PAPER NUMBER	
NEW YORK, NY 10001-7708			1764	

DATE MAILED: 06/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/648,857

Applicant(s)

TAKEYAMA ET AL.

Examiner

Kaity Handal

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 3, 13-22 and 28-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-12 and 23-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Examiner notes a typographical error in Election/Restriction requirement which was mailed out on 4/27/2006 where Group I claims should have been 1-12 and 23-27. Claims 13-22 and 28-31 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 5/23/2006.

Upon further analysis of the claims, examiner respectfully notes that claim 3 reads on the method of making a reformer. Therefore claim 3 is withdrawn as well.

### *Specification*

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;

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- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Keegan et al. (US 2002/0081471 A1).

With respect to claim 1, Keegan teaches an apparatus comprising: a micro reactor/reformer (figure 4) (page 4, paragraph [0049], lines 1-8) in which a flow path is formed for fluid to flow inside (as illustrated by inlet (120) through outlet (125)); and container/system enclosure (130 & 220) which accommodates the micro reactor and keeps an atmosphere on a periphery of the micro reactor at a pressure lower than the external pressure/(under vacuum) (page 4, paragraph [0051], lines 1-13).

4. Claims 1-2, 4-9, 11-12, 23 and 25 are rejected under 35 U.S.C. 102(e)/103(a) as being anticipated by Faville et al. (US 6,562,496 B2).

With respect to claim 1, Faville teaches an apparatus comprising: a micro reactor (fig. 1, 123) in which a flow path is formed for fluid to flow inside (as illustrated by inlet (101) through outlet (107)); and container/system enclosure (100) which accommodates the micro reactor (123) and keeps an atmosphere on a periphery of the micro reactor at pressure lower than external pressure. It would be obvious that the container/enclosure (100) would inherently withstand and perform in vacuum since Faville does teach having different pressures within the container/enclosure (100) (see Abstract).

With respect to claim 2, Faville teaches wherein an adsorption means (104 & 105) for adsorbing a medium which exists inside the container and propagates heat (col. 3, lines 30-32).

With respect to claims 4-6, Faville teaches wherein a heating means (col. 8, lines 9-10) for generating heat to heat the micro reactor.

Regarding limitations recited in claims 7 and 12 which are directed to a manner of operating disclosed device, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

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With respect to claims 8-9, Faville teaches wherein the micro reactor (123) comprises a reactor which changes the fluid from a liquid phase a gas phase (col. 7, lines 67-col. 8, lines 1-2).

With respect to claim 11, Faville teaches wherein a temperature measurement means exists for measuring the temperature of the micro reactor (col. 10, lines 62-67).

With respect to claims 23 and 25, Faville teaches an apparatus comprising: a micro reactor (fig. 1, 123) in which a flow path is formed for fluid to flow inside (as illustrated by inlet (101) through outlet (107)); and container/system enclosure (100) which accommodates the micro reactor (123) and keeps an atmosphere on a periphery of the micro reactor at pressure lower than external pressure, and an porous adsorption means (104 & 105) for adsorbing a medium which exists inside the container and propagates heat (col. 3, lines 30-32).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2<sup>4</sup> are rejected under 35 U.S.C. 103(a) as being unpatentable over Faville et al. (US 6,562,496 B2), as applied to claim 23 above, and further in view of Wegeng et al. (US 2003/0015093 A1).

With respect to claim 24, Faville discloses all claim limitations as set forth above but fails to show wherein the adsorption means comprises a polyimide-based material. Wegeng teaches an apparatus for swing adsorption as applied to fuel reformers (page 9, paragraph [0096]) comprising a polyimide-based material in order to enhance the rate of indirect heat transfer (page 11, paragraph [0121], lines 11-20).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a polyimide-based material as the adsorption means in Faville's apparatus, as taught by Wegeng, in order to enhance the rate of indirect heat transfer.

7. Claims 10 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faville et al. (US 6,562,496 B2), as applied to claim 23 above, and further in view of Struthers et al. (US 2002/0110712 A1).

With respect to claim 10, Faville discloses all claim limitations as set forth above but fails to show wherein the micro reactor comprises a reforming reactor which reforms carbon monoxide in the fluid into carbon dioxide. Struthers teaches a hydrogen generator (figure 1) comprising a reforming reactor/scavenger (22) (page 3, paragraph [0061]) which reforms carbon monoxide in the fluid into carbon dioxide in order to liquefy carbon dioxide and deliver it to a useful end (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a reforming reactor which reforms carbon monoxide

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in the fluid into carbon dioxide in Faville's apparatus, as taught by Struthers, in order to liquefy carbon dioxide and deliver it to a useful end.

With respect to claims 26-27, Faville discloses all claim limitations as set forth above but fails to show wherein the adsorption means has a surface coated with a material which physically/chemically adsorbs water or oxygen. Struthers teaches a hydrogen generator comprising an adsorption means (fig. 1, 20) comprising Yttrium and therefore can physically/chemically adsorbs water or oxygen in order to absorb sulfur (page 5, paragraph [0084]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include an adsorption means comprising Yttrium in Faville's apparatus, as taught by Struthers, in order to absorb sulfur.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaity Handal whose telephone number is (571) 272-8520. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KH

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6/8/2006

  
ALEXA DOROSHENK NECKEL  
PRIMARY EXAMINER